PATENT ABSTRACTS OF JAPAN

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(54) CHARACTER ERASING MATERIAL

(57)Abstract:
PURPOSE: To produce a character erasing material having elasticity by using a character erasing base material which contains a vinyl chloride resin, a plasticizer, a filler, and a self-abrasive porous material so as to improve strength without damaging erasing property.
CONSTITUTION: A character erasing material to be used for erasing lines drawn by a pencil consists of a character erasing base material which contains a vinyl chloride resin, a plasticizer, filler and a self-abrasive porous material. For the self-abrasive porous material, preferably a material having a porosity of 60-90% is used. The self-abrasive porous material is impregnated with a plastisol which contains the vinyl chloride, the plasticizer, and the filler, put in a mold, heated at 100-130°C for 30-90min., and made to gel. The self-abrasive porous material is existent in the character erasing material as a skeleton, so that the flexural strength of the character erasing material is reinforced, the elasticity is strengthened, and a porous sponge-like structure is provided.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to ******** for eliminating ****, such as a pencil and a mechanical pencil.
[0002]
[Description of the Prior Art] The thing of the rubber system to which the conventional pencil way-to-use-characters ****** uses natural rubber, synthetic rubber, a factice, etc. as a component, and the thing of the plastics system which uses a plastics resin, a plasticizer, a bulking agent, etc. as a component are used. As compared with the thing of a rubber system, ******** of a plastics system has a good moldability and the outstanding **** performance, and since stability is high, it is used widely. moreover," which raised the **** performance by blending a Carborundum, a powder emery, glass powder, silicic-acid powder, a zirconia particle, etc. with natural rubber or a plastics resin as ******** which **** with a ball-point, the character by the electronic copying machine, and drawing eliminate -- ****** is carried out and "is used
[0003]
[Problem(s) to be Solved by the Invention] However, ******** obtained by doing in this way is carrying out flexible structure, and its intensity is also weak. For this reason, there is a fault that ****** will break if it is going to eliminate **** etc. by the strong force, or it will be missing. In case a still finer place is eliminated, since the waist of ******** is weak, it winds, and elimination of **** of details becomes difficult. When it is especially made a thin rod-like configuration, this phenomenon is seen notably. The purpose of this invention is offering ******** which canceled such a fault, and is not spoiling erasability ability but offering vinyl-chloride-resin system ******** with the strong waist.
[0004]
[Means for Solving the Problem] By casting vinyl chloride resin using self-abrasiveness porosity material as a result of examination about the above-mentioned technical problem, this invention person finds out attaining the purpose and came to complete this invention.
[0005] That is, ******** of this invention is ****(ed) including vinyl chloride resin, a plasticizer, and a bulking agent, and consists of a base material and self-abrasiveness porosity material. The porosity of self-abrasiveness porosity material is 60 - 90% preferably.
[0006] The manufacturing method of ******** of this invention is characterized by sinking into self-abrasiveness porosity material, putting the plastisol containing vinyl chloride resin, a plasticizer, and a bulking agent into a mold, and 100-130 degrees C carrying out heating gelling for 30 - 90 minutes.
[0007] By existing as a skeleton in ********, the flexural strength of ******** is reinforced, the role which strengthens the waist is played, and, as for the self-abrasiveness porosity material in connection with this invention, the structure has the structure of the shape of very porous sponge. Furthermore, since this self-abrasiveness porosity is the composite of the layer which consists of a binder which is a continuation layer like the structure of a lead, and the layer which consists of discontinuous body material which does not contribute to adhesion of an interface, in accordance with the feature of just collapsing finely by scratch with space etc. like a pencil, it has it. Space which will be worn out if space is ground is not made to color the property. For example, minerals body material, such as boron nitride, talc, and a mica, a binder, a ****** agent (matter which disappears with a foaming agent or heat treatment), a bulking agent, etc. are kneaded, heat treatment is performed after fabrication, and although it has a comparatively firm skeleton by sintering or carbonizing, the structure which also carries out wear by scratch can be obtained. At less than 60%, it considers as 60 - 90%, if porosity exceeds 90 %, the reinforcement effect which is the feature of self-abrasiveness porosity material will not be discovered, the porosity of self-abrasiveness porosity material serves as the feature equivalent to the conventional plastics ********, it ****, components run short relatively and it is inferior to erasability, and the feel of ******** of it is lost and the fault that the touch at the time of elimination also falls produces it. In order to fully demonstrate the feature of ******** of this invention, 70 - 80% of porosity is more desirable. Moreover, since it **** if a pore diameter is too small not much, and it becomes impossible to sink in a base material, it is desirable to combine with the composition component of ******** to be used and to control suitably.
[0008] It ****, and it is the thing of the mixed constituent of the resin used for the fabrication of ******** for which the base material is generally used conventionally used for ******** of this invention, and its compounding agent, and a stabilizer, a coloring agent, perfume, etc. are blended if needed including vinyl chloride resin, a plasticizer, and a bulking agent.
[0009] As vinyl chloride resin, vinyl chloride resin, a vinyl chloride vinyl acetate copolymer, etc. which are used for general plastics **** are raised, and the vinyl chloride resin for a paste of the polymerization degree 800-2000 especially obtained by

the emulsion-polymerization method etc. preferably is raised.
[0010] As a plasticizer, a dioctyl phthalate, a dibutyl phthalate, a dioctyl adipate, etc. can be raised, and silicic-acid powder etc. can be illustrated in the calcium carbonate with which the bulking agent is generally also used, a powder emery, and the end of a glass powder, for example.
[0011] The back, the amount of [by which kneading distribution was carried out] ******** composition is made to sink into self-abrasiveness porosity material using methods, such as reduced pressure and pressurization, and the manufacturing method of ******** of this invention is put into a predetermined mold, for 100-130 degrees C and 30 - 90 minutes, it carries out heating gelling and obtains ********.
[0012]
[Function] The touch at the time of elimination which became brave, without winding even if ******** with strong high intensity and so-called waist of a high degree of hardness was obtained in order that self-abrasiveness porosity material might make a skeleton, and ******** of this invention made it especially the configuration of the shape of a narrow rod of a diameter is obtained.
[0013]
[Example] Next, an example explains this invention to a detail further.
(Example 1)
It ****. Base-material composition vinyl chloride resin (the vinyl chloride resin for the Nippon Zeon paste "121" --) The 50 sections A plasticizer (dioctyl phthalate) The 60 sections A stabilizer (calcium-Zn system stabilizer) The two sections Bulking agent (whiting) The 20 section above-mentioned mixture is mixed uniformly, and it sinks into cylindrical self-abrasiveness porosity material the porosity of 75%, and the diameter of about 5mm. It put into the mold, heating gelling processing was carried out for 30 - 60 minutes at 110-125 degrees C, and ******** was obtained.
[0014] (Example 1 of comparison) ******** was obtained like the example 1 except having made the porosity of self-abrasiveness porosity material into 50%.
[0015] (Example 2 of comparison) ******** was obtained like the example 1 except having made the porosity of self-abrasiveness porosity material into 90%. Evaluation of the rubber obtained in the above-mentioned example and the example of comparison is shown in Table 1.
[0016]
[Table 1]

	消去性	消し味	腰の強さ
実施例1	○	○	○
比較例1	×	×	◎
比較例2	○	○	×

◎：大変良い
○：良い
×：悪い

[0017]
[Effect of the Invention] Elimination of this invention is enabled exactly, without ******** winding, even if it can raise intensity, and it can obtain ******** with the so-called strong waist, therefore it faces elimination of a fine portion, without spoiling erasability by sinking a part for ******** composition into the self-abrasiveness porosity material as an endoskeleton. moreover, if the Carborundum used for ******(ing) to self-abrasiveness porosity material is blended, the powder worn out from self-abrasiveness porosity material will ****, an effect will be raised, and elimination also of ****, such as a ball-point, will be enabled -- it also just comes to have the effect of ********

[Translation done.]

* NOTICES *

1. This document has been translated by computer.So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] ******** containing vinyl chloride resin, a plasticizer, and a bulking agent which **** and consists of a base material and self-abrasiveness porosity material.
[Claim 2] ******** according to claim 1 whose porosity of self-abrasiveness porosity material is 60 - 90%.
[Claim 3] The manufacturing method of ******** characterized by sinking into self-abrasiveness porosity material, putting the plastisol containing vinyl chloride resin, a plasticizer, and a bulking agent into a mold, and carrying out heating gelling for 30 - 90 minutes at 100-130 degrees C.

[Translation done.]

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Title of the invention: ERASING MATERIAL

Applicant: MITSUBISHI PENCIL CO., LTD.

Inventor: NOBORU KANBA

Abstract:

PURPOSE: To provide a polyvinyl chloride resin typed eraser with enough strength without losing erasability, which can overcome the problems of breaking when a strong force is applied to erase the lines or bending unnecessarily thereby causing difficulty in erasing when applied to erase thin areas

CONSTITUTION: The method of preparing erasing materials having the characteristics of impregnating a plastisol which contains a polyvinyl chloride resin, a plasticizer and a filling agent in a self-abrasive porous material, putting into a mold and heating for 30 to 90 minutes at the temperature of 100-130°C for gelation.

This is English translation of ABSTRACT OF JAPANESE PATENT PUBLICATION (unexamined) No. 08258493 translated by Tomoko Ishii.

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(54)【発明の名称】　字消し材

(57)【要約】

【構成】　塩化ビニル樹脂、可塑剤、充填剤を含むプラスチゾルを自己摩耗性多孔質材に含浸して、型に入れ１００～１３０℃で３０～９０分間加熱ゲル化することを特徴とする字消し材の製造法。

【効果】　本発明は、内部骨格としての自己摩耗性多孔質材に字消し材組成分を含浸することにより、消去性を損なうことなく、強度を向上させ、いわゆる腰の強い字消し材を得ることができ、そのため細かい部分の消去に際しても、字消し材がくねくね曲がることなく、的確に消去可能にするものである。また、自己摩耗性多孔質材に砂字消しに用いるカーボランダムなどを配合すると、自己摩耗性多孔質材より摩耗した粉が字消し効果を向上させ、ボールペンなどの描線も消去可能にする、まさに砂字消しの効果も持つようになる。

【特許請求の範囲】

【請求項１】　塩化ビニル樹脂、可塑剤、充填剤を含む字消し基材、および自己摩耗性多孔質材からなる字消し材。

【請求項２】　自己摩耗性多孔質材の気孔率が６０～９０％である請求項１記載の字消し材。

【請求項３】　塩化ビニル樹脂、可塑剤、充填剤を含むプラスチゾルを自己摩耗性多孔質材に含浸して、型に入れ１００～１３０℃で３０～９０分間加熱ゲル化することを特徴とする字消し材の製造法。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、鉛筆やシャープペンシルなどの描線を消去するための字消し材に関する。

【０００２】

【従来の技術】従来の鉛筆用字消し材は、天然ゴム、合成ゴム、サブなどを成分とするゴム系のものと、プラスチック樹脂と可塑剤、充填剤などを成分とするプラスチック系のものが用いられている。プラスチック系の字消し材は、ゴム系のものと比較して、良好な成形性、優れた消字性能を有し、安定性が高いため広く用いられている。また、ボールペンによる描線、電子複写機による文字や図の消去する字消し材としては、カーボランダム、金剛砂、硝子粉末、ケイ酸粉末、ジルコニア粒子などを天然ゴムやプラスチック樹脂に配合することによって消字性能を向上させた“砂字消し”が用いられている。

【０００３】

【発明が解決しようとする課題】しかし、このようにして得られた字消し材は、柔軟な構造をしており、強度も弱い。このため描線などを強い力で消去しようとすると字消しが折れたり、欠けてしまうという欠点がある。さらに細かい所を消去する際、字消し材の腰が弱いためにくねくね曲がってしまい、細部の描線の消去が困難になる。特に細棒状の形状にしたときに、この現象は顕著に見られる。本発明の目的は、このような欠点を解消した字消し材を提供することであり、消去性能を損なわず、腰の強い塩化ビニル樹脂系字消し材を提供することである。

【０００４】

【課題を解決するための手段】本発明者は上記課題について検討の結果、自己摩耗性多孔質材を用いて塩化ビニル樹脂を成型することにより、目的を達成することを見出し、本発明を完成するに至った。

【０００５】すなわち、本発明の字消し材は、塩化ビニル樹脂、可塑剤、充填剤を含む字消し基材、および自己摩耗性多孔質材からなる。好ましくは自己摩耗性多孔質材の気孔率が６０～９０％である。

【０００６】本発明の字消し材の製造法は、塩化ビニル樹脂、可塑剤、充填剤を含むプラスチゾルを自己摩耗性多孔質材に含浸して、型に入れ１００～１３０℃、３０～９０分間加熱ゲル化することを特徴とする。

【０００７】本発明にかかわる自己摩耗性多孔質材とは、字消し材中に骨格として存在することにより、字消し材の曲げ強度を補強し、腰を強くする役割を果たすものであり、その構造は非常にポーラスなスポンジ状の構造を持つものである。さらに、この自己摩耗性多孔質は鉛筆芯の構造のごとく連続層であるバインダーよりなる層と、界面の接着へ寄与しない不連続の体質材からなる層の複合材であるため、まさに鉛筆のごとく紙面との擦過等により細かくくずれるという特徴をあわせもつものである。その性質は紙面を擦ると摩耗するような、紙面を着色させないものである。例えば、窒化ホウ素、タルク、マイカなどの無機質体質材、バインダー、穴開け剤（発泡剤あるいは熱処理により消失する物質）、充填剤などを混練し、成形後、熱処理をほどこし、焼結あるいは炭素化することにより比較的強固な骨格を持つが、擦過により摩耗もする構造体を得ることができる。自己摩耗性多孔質材の気孔率は６０～９０％とし、気孔率が９０％を越えると自己摩耗性多孔質材の特徴である補強効果が発現せず、従来のプラスチック字消し材と同等の特徴となり、６０％未満では字消し成分が相対的に不足し、消去性に劣り、字消し材の感触がなくなり消去時のタッチも低下するという欠点が生じる。本発明の字消し材の特徴を十分に発揮するためには、気孔率７０～８０％がより好ましい。また、気孔径は余り小さすぎると字消し基材を含浸することができなくなるので、使用する字消し材の組成成分に併せて適宜制御することが望ましい。

【０００８】本発明の字消し材に用いる字消し基材とは、従来一般的に使用されている字消し材の成形に用いる樹脂とその配合剤との混合組成物のことであり、塩化ビニル樹脂、可塑剤、充填剤を含むものであり、必要に応じて、安定剤、着色剤、香料などを配合されたものである。

【０００９】塩化ビニル樹脂としては、一般的プラスチック字消しに使用される塩化ビニル樹脂、塩化ビニル－酢酸ビニル共重合体などがあげられ、特に好ましくは乳化重合法などで得られる重合度８００～２０００のペースト用塩化ビニル樹脂があげられる。

【００１０】可塑剤としては、例えば、ジオクチルフタレート、ジブチルフタレート、アジピン酸ジオクチルなどをあげることができ、充填剤も一般的に使用されている炭酸カルシウム、金剛砂、ガラス粉末、ケイ酸粉末などが例示できる。

【００１１】本発明の字消し材の製造法は、自己摩耗性多孔質材に混練分散された字消し材組成分を減圧、加圧などの方法を用いて含浸させて後、所定の型に入れ１００～１３０℃、３０～９０分間加熱ゲル化をして字消し材を得るものである。

【００１２】

【作用】本発明の字消し材は自己摩耗性多孔質材が骨格をなすために高強度、高硬度のいわゆる腰の強い字消し材が得られ、特に直径の細い棒状の形状にしてもくねくね曲がることなくしっかりとした消去時のタッチが得られる。

【００１３】

【実施例】次に本発明を実施例によりさらに詳細に説明する。

（実施例１）

字消し基材組成

塩化ビニル樹脂（日本ゼオン製　ペースト用塩化ビニル樹脂“１２１”	５０部
可塑剤（ジオクチルフタレート）	６０部
安定剤（Ｃａ－Ｚｎ系安定剤）	２部
充填剤（重質炭酸カルシウム）	２０部

上記混合物を均一に混合し、気孔率７５％、直径約５㎜棒状の自己摩耗性多孔質材に含浸して、型に入れ、１１０～１２５℃で３０～６０分間加熱ゲル化処理して字消し材を得た。

【００１４】（比較例１）自己摩耗性多孔質材の気孔率を５０％とした以外、実施例１と同様にして字消し材を得た。

【００１５】（比較例２）自己摩耗性多孔質材の気孔率を９０％とした以外、実施例１と同様にして字消し材を得た。上記実施例、比較例で得られた消しゴムの評価を表１に示す。

【００１６】

【表１】

	消去性	消し味	腰の強さ
実施例１	○	○	○
比較例１	×	×	◎
比較例２	○	○	×

◎：大変良い
○：良い
×：悪い

【００１７】

【発明の効果】本発明は、内部骨格としての自己摩耗性多孔質材に字消し材組成分を含浸することにより、消去性を損なうことなく、強度を向上させ、いわゆる腰の強い字消し材を得ることができ、そのため細かい部分の消去に際しても、字消し材がくねくね曲がることなく、的確に消去可能にするものである。また、自己摩耗性多孔質材に砂字消しに用いるカーボランダムなどを配合すると、自己摩耗性多孔質材より摩耗した粉が字消し効果を向上させ、ボールペンなどの描線も消去可能にする、まさに砂字消しの効果も持つようになる。